AMENDMENT TO THE CLAIMS

1. (currently amended) A method of decoding data comprising:

receiving a signal comprising a plurality of bit patterns at a bank of equalizers, each equalizer in the bank of equalizers each tuned to a different bit pattern with a corresponding equalization target;

generating pattern dependent outputs from the equalizers; and

calculating an estimated bit sequence with a detector using the pattern dependent outputs.

2. (original) The method of claim 1 wherein the signal is received from a recording channel.

3. (original) The method of claim 1 wherein the step of receiving comprises:

reading a sequence of signal samples from a channel; and

passing segments of the sequence of signal samples to the bank of equalizers one segment at a time.

4. (currently amended) The method of claim 1 wherein the step of calculating comprises:

calculating a path metric for every possible state transition sequence of a bit pattern using the pattern dependent equalizer outputs according to transition information; and

selecting a bit sequence corresponding to a path having the smallest accumulated path metric.

5. (original) The method of claim 1 wherein each equalizer includes a pattern-dependent filter.

6. (original) The method of claim 1 wherein each equalizer includes an adaptive algorithm for tuning each equalizer to a bit pattern during use.

7. (currently amended) A method of decoding data comprising:

        processing a segment of a received signal in a bank of equalizers, each equalizer tuned to a <u>different</u> bit pattern and an equalization target to produce an equalized output for each equalizer; and

        detecting a bit sequence using a branch metric calculation to process the equalized output.

8. (original) The method of claim 7 wherein the step of processing comprises:

        dividing the segment of the received signal into finite overlapped segments, and

        calculating an equalized output for each of the finite segments with the bank of equalizers.

9. (original) The method of claim 7 wherein the equalized output is used in sequence detection according to the bit pattern associated with the equalizer.

10. (original) The method of claim 7 wherein a number of equalizers in the bank of equalizers is determined by a maximum number of possible states for a selected pattern window.

11. (original) The method of claim 7 wherein before the step of processing, the method further comprising:

        tuning each equalizer in the bank of equalizers to a bit pattern.

12. (original) The method of claim 11, wherein the step of tuning comprises:

        selecting an equalizer from the equalizer bank;

        sending known data to the selected equalizer to calculate a target output signal;

        calculating a difference between an output signal from the selected equalizer and the target output signal; and

        tuning the selected equalizer to minimize the difference.

13. (original) The method of claim 7 wherein the branch metric calculation is a square of a difference between a received signal sample and a desired target signal determined by a state transition.

14. (original) The method of claim 7 wherein the equalization target is pattern-dependent.

15. (original) The method of claim 7 wherein the branch metric calculation is based on a noise whitening principle when noise in the received signal is correlated.

16. (original) The method of claim 7 wherein the branch metric calculation is based on a covariance matrix of noise when noise in the received signal is correlated.

17-29. (cancelled)